

Claims

1. A method of patterning a substrate according to a predetermined path, said method including forming a liquid film on the substrate surface and 5 directing laser energy from a laser through the film to etch the substrate surface, wherein etched material is carried away from the substrate surface via evaporation of the film during said etching.

2. The method of claim 1, wherein the liquid film is formed on the substrate 10 surface by jetting a liquid vapour onto the substrate surface.

3. The method of claim 2, wherein the liquid vapour is composed of one of water, alcohol, inert liquid and non-reactive liquid.

15 4. The method of claim 2 or 3, wherein the thickness of the liquid film is in the range of several micrometers to several tens of micrometers.

20 5. The method of any one of claims 1 to 4, wherein the liquid vapour is jetted with a gas to carry the liquid vapour onto the substrate surface.

6. The method of claim 5, wherein the gas is one of nitrogen, compressed air, oxygen and an inert gas. —

25 7. The method of any one of the preceding claims wherein the laser directs laser energy in pulses of predetermined duration.

8. The method of claim 7, wherein the pulse duration is in the range of 1 to 30 100ns.

9. The method of any of the preceding claims, wherein the laser fluence of the laser is more than the etching threshold of the substrate.

5 10. The method of claim 9, wherein the laser fluence is more than 150 mJ/cm².

11. The method of any one of the preceding claims wherein the substrate surface has an ITO film onto which the liquid film is formed.

10 12. The method of any one of the preceding claims, wherein the substrate has one or more layers.

13. The method of claim 12, wherein at least one layer of the substrate is silicon oxide.

15 14. The method of claim 13, wherein the silicon oxide layer is the top layer of the substrate.

20 15. The method of any one of the preceding claims, wherein the substrate is substantially composed of glass, quartz and/or silicon.

16. The method of any one of the preceding claims, wherein the substrate is an ITO film. IC package, silicon wafer, conductor, semiconductor or insulator.